



HERSCHEL/PLANCK

REF. : H-P-ASP-MN-5558

DATE : 20 &  
21/10/2004

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**COMPTE RENDU DE REUNION / MINUTES OF MEETING**

LIEU / PLACE : ASP Cannes

OBJET / PURPOSE :

CLASSIFICATION :

**Data Management Working Group Meeting #21**

| PARTICIPANTS<br>ATTENDEES   | SOCIETE<br>FIRM | SIGNATURE<br>SIGNATURE | PARTICIPANTS<br>ATTENDEES | SOCIETE<br>FIRM | SIGNATURE<br>SIGNATURE |
|-----------------------------|-----------------|------------------------|---------------------------|-----------------|------------------------|
| K.King                      | RAL             |                        |                           |                 |                        |
| O.Bauer                     | MPE             |                        | M.Miccolis                | LABEN           |                        |
| L.Dubbeldam                 | SRON            |                        | F.Pancher                 | LPSC            |                        |
| S.Thürey                    | ESTEC           |                        |                           |                 |                        |
| P.Estaria                   | ESTEC           |                        | F.Chatte (part.)          | ASP             |                        |
| M.Schmidt                   | ESOC            |                        | B.Dubois (part.)          | ASP             |                        |
| F.Sauvage (part.)           | ASP             |                        |                           |                 |                        |
| REDACTEUR / WRITTEN<br>BY : | P.Couzin        |                        |                           |                 |                        |

CONCLUSION :

DISTRIBUTION :PARTICIPANTS /  
ATTENDEESPOUR ACTION :  
FOR FURTHER ACTIONPOUR INFORMATION :  
FOR INFORMATION

APPROUVE PAR / APPROVED BY

|                          |          |  |  |  |
|--------------------------|----------|--|--|--|
| NOM / NAME               | P.Couzin |  |  |  |
| SIGNATURE /<br>SIGNATURE |          |  |  |  |

ACTION

**Planck Session**

Agenda is in Annex 1

**1- Action Items from DMWG 20**

**AI #10** : HFI 1553 tests

Test has been performed by HFI.

ESA/ASP confirm that the applied test Spec. Ref TR-PHBA-140604-LAL is in line with the 1553 test requirements (SEA AS 4112).

Anomalies have been found (see Annex 2) : amplitude variation test and Mode Code to subaddress 31. The 2<sup>nd</sup> point has been corrected.

ESA/ASP request the 1<sup>st</sup> point to be formalized through a NCR.

AI#1 HFI  
19/11/04

HFI confirm the electrical tests on the 1553 interface will be repeated for all delivered models.

AI 10 is closed

**AI #11** : LFI & SCE 1553 tests

LFI and SCE state that no compliance document to AS 4112 (or Mil Hdbk) has been issued yet.

Same Action is left opened (renumbered)

AI#2 LFI &  
SCE  
26/11/04

ESA urge LFI to act towards the REBA manufacturer to ensure compliance to 1553 test requirements. It is underlined that the main objective from ESA/ASP is to have this test done, or compliance stated and demonstrated. Possible missing issues shall have to be covered at LFI level before delivery to ESA° (currently nothing is foreseen at LFI level).

LPSC directly contracts with the SCE manufacturer. ESA/ASP urge them to get a clear compliance statement before SCE unit delivery.

**AI #12** : HFI FDIR procedure

AI closed by presentation in Annex 3

**AI #13** : HFI EGSE-CCS test

See in Annex 2 HFI position. Test has been run in week 42. Action is closed.

**2- Planck Instr. FDIR understanding (see annex 3)**

**HFI :**

FDIR Class 3 : ASP point out that this FDIR strongly interacts with the FDIR class 5 and recommends to only rely on the FDIR 5 monitoring and actions. It is pointed out that the most likely cases of LCL's trip off in flight are basically

related to transient events (SET), within the LCL's themselves, and possibly within the user's DC/DC converters, thus not corresponding to real problems within the user.

HFI shall comment ASP proposal

AI#3 HFI  
08/11/04

FDIR Class 4 : HFI/LFI/SCE shall check whether the Planck level FDIR issues have been already addressed , report on the current status and possibly initiate the discussion in the frame of Planck Instruments interface meetings

AI#4 HFI /  
LFI/ SCE  
08/11/04

**SCE :**

FMECA shall be reviewed, and action expected from the spacecraft have to be detailed .

AI#5 SCE  
19/11/04

**LFI :**

LFI shall confirm the response to apply in case of REBA 1553 RT DLL failure (current baseline is "do nothing") and specify a "switch off" procedure.

AI#6 LFI  
30/11/04

**3- Instrument configuration for IST's**

ASP problematics is explained :

- IST test requirement sheets and test specs have to be written for end 12/04
- These test aim to functionally validate the satellites, including instruments in flight representative conditions. IST 's should be debugged on AVM and run on FM 's
- The instruments, as inputs to the test specs, shall define precisely the operating constraints and limitations (which mode can be activated, when in the sequence, representativity vs flight conditions) both for AVM « instruments » and FM instruments

**HFI :**

AVM : configuration is DPU + S/S simulators. All modes can be exercised, but with simulated data. There are also limitations at the level of the FDIR (class 5) : not all failure will be able to be reproduced.

FM : instrument config is complete. All modes can be activated. Representativity of data rates needs to be confirmed.

HFI, LFI and SCE shall detail AVM (except LFI) and FM configuration specificities and limitations as far as electrical and data handling interfaces are concerned (power, data rates, modes, FDIR).

AI#7  
LFI/SCE/HFI  
29/11/04

**Common Session**

Agenda is in annex 1.

**1- Action Items from DMWG20**

**AI #6 :** ESOC answer is provided in Annex 5.

Instruments shall comment on the Annex 5 (MIB files impact of TM APID

AI#8 Inst.

duplication).

17/11/04

ESOC shall report this issue to HGSSE and PGSSG and get an answer.

AI#9 ESOC  
17/11/04

**AI #7** : ASP agree to make the following TM science APID's usable by instruments :

- xx5h to xxBh for odd APID's (redundant chain)
- xx4h to xxAh for even APID's (prime chain)

This will be specified in the next PS ICD update (present applicable version is Issue 5.0 dated 20/7/04).

LFI underline that they do not make use of redundant APID's (only APID 604h is used for TM science) : the next PS ICD update will take this into account

AI is closed

**AI #8** : For TC's the current CDR baseline (see PS ICD Issue 5.0) is that a single APID (even APID) is used for both nominal and redundant units. The routing of the TC's on board is driven by a table which associates the RT address to the APID (ie. to the user). Instruments DPU on/off or switch over will be accompanied by the corresponding change (by a dedicated TC sent before/after the switch off/on) of the table containing the RT address to be used. This is an operation constraint. Note that this is feasible because there is no instrument DPU autonomous switch over.

As far as HPSDB is concerned, the parameters must be defined separately for each « box », (nominal and redundant), and because the switch over will be initiated by the instruments controller on ground, the proper database « side » will obviously be used

AI 8 is closed

**AI #9** : Herschel instruments :Concerning TM PTC DPU/ICU already set to 0 reserved bits, so for Herschel instruments ASP proposal is already implemented. For TC PTD the reserved bits are not checked. There is no problem to implement this check in the next OBSW version, and Herschel instrument agree with this change.

SCE : ASP proposal is agreed

ESA : ASP proposal is agreed

AI 9 is closed.

## 2- HPSDB issues

See ASP presentation in Annex 6.

Transfer of last MIB files versions has shown errors at various levels.

ASP shall report on the found errors to the instruments contact person for DB issues with copy to Instrument PM in a systematic way.

LFI complain about the time taken to convert their MIB files (delivered in 6/04) into HPSDB. They need a feedback in order to freeze SW-agreements. ASP justify this by the need to give priority to HFI and Herschel instruments

AI#10 ASP  
12/11/04

(constraints coming from tests to come); for that reason, activities on LFI MIB transfer have been stopped.

All parties agree that ESA must be involved to define the priorities among the different instruments. ESA nominated focal point for all database issues is Luciano Di Napoli, focal point on ASP side is François Sauvage.

ASP point out the fact that the PIC table allows only one definition per type/subtype. In order to allow the merging of the instrument, PLM and SVM databases, the definition shall be unique.

ASP shall propose a definition of the PIC table to be used by all parties involved (instruments, ACMS, ...).

AI#23 ASP  
12/11/04

**Bridge file generation**

In the current status the S2K bridge files generated from HPSDB for instruments required manual modification for what deals with the generic data generation for curve, command verification stage and parameter range set. Two solutions are proposed by ASP (refer to presentation in annex 6) and the following is agreed : the instruments will be authorised to use the S2K most significant digit (which was required to not be used in the naming convention) in case of generic data.

ASP to provide the correspondence between the instruments generic data identifier and the HPSDB generic identifier. For instance :

AI#11 ASP  
12/11/04

**On-board identifier**

According to PSICD 5.0, the instruments no more need to use the TM parameter on-board identifier. For CDMS on-board software the generation of on-board identifier is done via dedicated calibration curve. ASP would like to have only one way to generate those parameters.

However some instruments (confirmed for PACS) use this on-board identifier on the instrument EGSE / HPSDB.

As a consequence the following implementation is proposed :

- . The instrument bridge files on-board identifier will be loaded inside HPSDB,
- . When generating S2K bridge file this on-board identifier will be returned inside the bridge files,
- . When generating CCS bridge files this on-board identifier will not be exported.

The current status about the usage of on-board identifier by instrument is the following :

- |                   |                              |
|-------------------|------------------------------|
| . PACS            | Used for their internal need |
| . SPIRE           | To be checked                |
| . HIFI            | Not used                     |
| . HFI             | To be checked                |
| . LFI             | Not used                     |
| . Sorption cooler | To be checked                |

Note : in case the on-board identifier is for internal use or not used, the Naming convention can re-allocate the corresponding on-board identifier allocation (warning in case of internal use some allocation could be needed for Herschel instruments processed on the HCSS)

SPIRE, HFI and sorption cooler to check the usage of parameter on-board identifier.

AI#12 SPIRE,  
LFI, HFI, SCE  
12/11/04

### TC gap and overlapping

SCOS allows to define TC including gap and overlapping between TC parameters, however at real time execution the parameter are processed in the order of their absolute position and in case of gap the parameter is shifted on the left in order to fill the gap and in case of overlapping the parameter is shifted on the right in order to remove the overlapping. This processing could result in the fact that the TC sent to the spacecraft is not the one defined in the bridge files.

An mission specific additional check is proposed by ASP to be added inside HPSDB in order to avoid gap and overlapping between TC parameters. Instruments agree on this new check.

### SCOS phantom

When CCS or S2K bridge files are loaded by CCS or SCOS, those files are modified for instance :

- . Reference to previous item (TC gap and overlapping),
- . Insertion of reserved SCOS packet,
- . Modification of extrapolation flag processing,
- . Etc ...

"SCOS phantom" refer to the processes which perform those modifications. ESA shall provide an exhaustive list of the actions performed by the "SCOS phantom" corresponding to instrument SCOS version.

AI#13 ESA  
19/11/04-

### TM packet with redundant APID (see annex 6)

ASP to check the most suitable interface for HPSDB

AI#14 ASP  
19/11/04-

*LFI representative leaves at this point of the meeting*

### CUS

This is transparent for AIT, instruments will deliver TOPE test sequences. ASP to distribute the TOPE reverse generation documentation.

AI#15 ASP  
19/11/04

### Test sequence naming convention

ASP to distribute the proposed modified document (Issue 1.1)

AI#16 ASP  
19/11/04

**Herschel Session**

Agenda is in Annex 1

**1- Action Items from DMWG 20**

**AI #1** : Herschel instrument indicate that the SAE AS 4112 document is applicable to the DPU/ICU verification plan. HFI NCR / anomalies found during their similar test will be distributed to all DMWG members  
Herschel Instruments shall report on the progress on the testing of the DPU/ICU 1553 testing.

AI#17  
Herschel Inst  
17/12/04.

AI 1 is closed

**AI #2** : HIFI request to be switched to Standby Mode (1 single Command) upon S/C Mode change (see **SRON-U/HIFI/SP/2004-002**).  
The switch OFF procedure is defined in the User's Manual (**SRON- U/HIFI/UM/2004-001**).

AI 2 is closed

**AI #3** : See answer in Annex 2 : PACS request to be switched OFF in case it cannot be commanded.

AI 3 is closed

**AI #4** : Issue is still under discussion within HIFI. AI remains open.

AI#18 HIFI  
26/11/04

**AI #5** : see ESA/ASP comments in Annex 2. AI 5 is closed.  
Herschel instruments shall detail the present operation of the DPU/ICU boot SW, and analyse its compliance vs ESA/ASP comments. If necessary, an update of the boot SW to improve its observability will be performed.

AI#19  
Herschel Inst.  
26/11/04

**2- PACS 1553 interface test**

Last test was performed on 17/9/04.

- Database bridge file could not be loaded
- Burst Mode test did not work (only a small subset of packets were acquired).

A MRB will be organized to resolve the 2<sup>nd</sup> point after all parties have received the necessary documentation (from IFSI, SSBV). ESA, MPE, IFSI, SSBV, ASP must be involved. Tentative date is 2/11/04, 14h00. MRB telecon will be organized by ESA.

**3- Instrument FDIR understanding (See Annex 4)**

SPIRE inputs are understood and considered complete.

PACS inputs are understood. Switch ON and switch OFF procedures shall be defined.

HIFI inputs are understood. FDIR related to HIFI communication with S/C is still TBD (see AI 4 in §1 above).

#### 4- OBSM status (item from Common session)

See Annex 7.

Herschel instruments shall provide a feed back on when and where the OBSM tool (D2) delivery shall take place.

#### 5- HGSSE status (item from Common session)

See Annex 8.

#### 6- IEGSE – CCS integration (item from Common session)

Herschel Instruments IEGSE hardware configuration is presented; ASP request a printer to be introduced in the LAN (not currently foreseen).

Necessary information is :

- H/W integration procedure (ASP)
- Mini MIB (PACS)
- Test plan (PACS)
- Bridge files (merged between CCS, instruments) (ASP)

Tentative date for IEGSE-CCS test is 15 to 17/11/04.

#### 7- Instruments user Manual status (item from Common session)

ESOC strongly re-state the need for proper instrument user's manual which structure and contents is in line with OIRD in view of the satellite simulator development and SVT preparation.

#### 8- Instruments operation during system level testing

ASP shall distribute to all instruments a table identifying the areas in which the compliance with the flight conditions or operations must be stated (eg. average power, power profile, average data/packets rate, burst rate, ...).

#### 9- AOB

SPIRE Start of Scan : ASP expose its concern on the present SPIRE IID B requirement related to the accuracy of the start of SCAN. As it is, the S/C compliance to this requirement is very difficult to assess. SPIRE is requested to explain its real need in terms of knowledge of the S/C pointing plus associated time at Start of Scan (and during any moment of the scan).

AI#20 all Inst  
26/11/04

AI#21 ASP  
(10/11/04)

AI#22 ASP  
19/11/04





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**COMPTE RENDU DE REUNION / MINUTES OF MEETING**

LIEU / PLACE : *ASP Cannes*

Next meeting :

Agreed date is :

**Herschel : whole day 1/02/05 starting 9AM**

**Planck : 01/02/05 afternoon till 02/02 noon**



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| INITIATOR<br>Firm / person | ACTION |  |                           | DATE     |
|----------------------------|--------|--|---------------------------|----------|
|                            | N°     | DESCRIPTION  | ACTIONEE<br>Firm / person | DUE      |
| ESA/ASP                    | 1      | To formalize the 1553 test anomalies via NCR process   | HFI                       | 19/11/04 |
| ASP                        | 2      | Instruments shall define a Standby Mode and FDIR mode according to ASP note "Instruments Standby modes boundary conditions"  | HIFI                      | 20/9/04  |
| ASP                        | 2      | To provide a compliance matrix to AS4112 test plan   | LFI + SCE                 | 26/11/04 |
| ASP                        | 3      | to comment ASP proposal wrt referring to FDIR class 5 for LCL trip off   | HFI                       | 08/11/04 |
| All                        | 4      | To report on or address the issue of Planck level FDIR   | LFI/HFI/SCE               | 08/11/04 |
| ASP                        | 5      | To review FMECA and detailed expected S/C autonomous actions   | SCE                       | 19/11/04 |
| ASP                        | 6      | confirm the response to apply in case of REBA 1553 RT DLL failure  | LFI                       | 30/11/04 |
| ASP                        | 7      | detail AVM (except LFI) and FM configuration specificities and limitations as far as electrical and data handling interfaces are concerned (power, data rates, modes, FDIR). | LFI/SCE/HFI               | 29/11/04 |
| ESA                        | 8      | Instruments shall comment on the MIB files impact of TM APID duplication   | All Inst + SCE            | 17/11/04 |
| All                        | 9      | report on MIB files impact of TM APID duplication to HGSSE and PGSSG and get an answer   | ESA                       | 17/11/04 |
| Inst.                      | 11     | report on the errors found during bridge files generation to the instruments contact with copy to Instrument PM in a systematic way  | ASP                       | 12/11/04 |
| ASP                        | 12     | To check the usage of on-board identifier parameter.   | SPIRE/HFI/ SCE            | 12/11/04 |



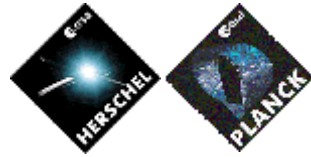
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|         |    |   |                      |          |
|---------|----|---|----------------------|----------|
| ASP     | 13 | provide an exhaustive list of the actions performed by the "SCOS phantom" corresponding to instrument SCOS version.   | ESA                  | 19/11/04 |
| All     | 14 | To check the most suitable interface for HPSDB for TM packets with redundant APID's   | ASP                  | 19/11/04 |
| All     | 15 | to distribute the TOPE reverse generation documentation.  | ASP                  | 19/11/04 |
| All     | 16 | to distribute the proposed modified naming convention document (Issue 1.1), for test sequences  | ASP                  | 19/11/04 |
| ESA/ASP | 17 | Report on the progress on the testing of the DPU/ICU 1553 testing.  | Herschel Inst.       | 17/12/04 |
| ASP     | 18 | establish in details the expected spacecraft actions in case of communication anomalie  | HIFI                 | 26/11/04 |
| ESA/ASP | 19 | detail the present operation of the DPU/ICU boot SW, and analyse its compliance vs ESA/ASP comments. If necessary, an update of the boot SW to improve its observability will be performed. | Herschel instruments | 26/11/04 |
| ESA     | 20 | provide a feed back on when and where the OBSM tool (D2) delivery shall take place  | Herschel instruments | 29/10/04 |
| Inst    | 21 | To provide necessary information for IEGSE-CCS test   | ASP                  | 10/11/04 |
| Inst    | 22 | distribute to all instruments a table identifying the areas in which the compliance with the flight conditions or operations must be stated.  | ASP                  | 19/11/04 |
| Inst    | 23 | propose a definition of the PIC table to be used by all parties involved (instruments, ACMS, ...).  | ASP                  | 12/11/04 |

## ANNEX 1

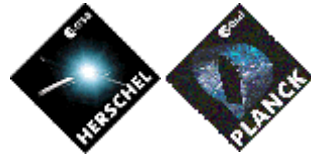
### AGENDA DMWG #21 - Planck Session (20/10 morning)

- 1- DMWG20 Actions items 10, 11, 12, 13 review/closure
- 2- ASP understanding of Planck Inst. FDIR and operation interface with spacecraft
- 3- Approach for instruments operation during system level testing (IST 's) on AVM and on FM spacecraft
- 4- AOB (SCE 1553 I/F test status )




## AGENDA DMWG #21 - Common Session (20/10 afternoon)

- 1- DMWG20 Actions items 6,7,8,9 review/closure
- 2- HGSSE and PGSSG working groups progress reports
- 3- HPSDB issues
  - 3.1-compatibility of instrument files with MIB ICD (inst. Merging, PIC, ...)
  - 3.2- use of parameters ID 's
  - 3.3- Handling of instruments odd APID 's (compliance to PS ICD Iss 5.0)
- 4- IEGSE Integration
- 5- presentation about OBSM status
- 6- wrap up of IUM status (three received so far: LFI, HFI, and HIFI)
- 7- AOB



## **AGENDA DMWG #21 - Herschel Session (21/10 morning)**

- 1- DMWG20 Actions items 1, 2, 3, 4, 5 review/closure**
- 2- PACS 1553 I/F test status**
- 3- ASP understanding of Herschel Inst. FDIR and operation interface with spacecraft**
- 4- Approach for instruments operation during system level testing (IST 's) on AVM and on FM spacecraft**
- 5- AOB (SPIRE Start of Scan)**

|  |                           |                           |
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## ANNEX 2

### HFI AI Answers

1- PLL and DLL 1553 test

Problem 1: No conformity of RT on Input Characteristics (Amplitude Variations) test. The pass criteria is  $V_{pp} \leq 0,86 V_{pp}$  for the first No Response - > failed at 0,95 Vpp.

Problem 2: Error for Mode Code at sub-address 31- > Configuration of the Bu-61582 -> correction of 1553 library.

2- AI-13: I-EGSE CCS test:

Pipe protocol test done in week 42: a test report is being produced by B.Dubois.

Briefly:

- Reception of 3 types of TM packet with a same SSC acquired during the 1553 test of April: Ok.
- Emission of RMAlive packet: Ok (but CCS status not updated).
- Reception of TCecho: not Ok.
- Little worry during test operation: if I-EGSE processes crash -> close of the connection by CCS -> how the reconnection is foreseen ?


3- OBSM installation and test

Please, refer to the report sent in September.

D1P1 installation (which should fix the main inconsistencies detected in

the D1) is foreseen in the second part of October.

It should allow to test completely this OBSM on the HFI DPU EEPROM.

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**PACS AI Answers**

DMWG#20-01:

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No confirmation received yet.

DMWG#20-3:

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It is not clear to me why for PACS or HIFI the situation should be different from SPIRE. Anyway, speaking of PACS, if TC can not be sent for me the only possible thing to do is switch off the instrument. Any other decision depends on a lot of possibilities that the satellite can not handle (was an OBCP running? which one? was it completed? is TM still coming?). Being RT the DPU can do nothing to recover 1553 anomalies, so my suggestion is to switch off the instrument.

DMWG#20-9:

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Concerning TM PTC DPU already sets to 0 reserved bits, so for us ASP proposal is already implemented. For TC PTD the reserved bits are not checked. I do not see any problem to implement this check (but not for present OBSW, you know).



|   |                 |  |                           |
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**ESA AI Answers**

AI-5 of DMWG#20

"ASP & ESA shall formally comment Herschel boot SW description (also possibly addressing the low level protocol implementation)."  
 Since one of the major concerns here is the operational aspect, I would like to express the following concerns:

[REF1:] e-mail from Renato Orfei of 15 June 2004 titled "DPU-ICU Boot Software Services as per Annex 3 of MoM of DMWG#20 H-P-ASP-MN-5107  
 [REF2:] PS-ICD; SCI-PT-ICD-07527; issue 5.0 of 20-Jul-2004

The approach on how to use the services in the DPU-ICU boot software as per [REF1] leads to scenarii which require to operate without adequate means for validation of telecommand reception or execution. This is not acceptable from the point of view of in-flight operations.

1) Event Reporting

1a) Using TM(5,2) to flag the successful completion of a test is not adequate and is not in line with [REF2] requ 5360-EVRP, which explicitly states that TM(5,2) is foreseen for non-nominal cases for which un-scheduled on-board recovery are required.

Instead the following approach would be appropriate:


- in case of autonomous test(s), executed autonomously upon start-up, a TM(5,1) shall be issued
- in case of test(s) initiated by ground commands, a TM(1,7) shall be issued upon successful completion of the test

1b) Unsuccessful test(s)

- in case of autonomous test(s), executed autonomously upon start-up, a TM(5,4) is appropriate in case of failure
- in case of test(s) initiated by ground commands, a TM(1,8) shall be issued when unsuccessful

2) Memory Management

It is understood that On-Board Software Maintenance is nominally not performed during boot (i.e. when boot is halted), and the TC(6,2) foreseen (as mentioned in [REF1] is there for critical failures where minimum patch activities may help. If that is not the case (i.e. if the boot s/w is being used for "nominal"

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On-Board Software Maintenance Activities), then TC(6,2) alone is not sufficient at all, and a minimum set of TC/TM packets of service 6 and appropriate service 1 responses would need to be considered.

### 3) Service 1

The DPU- ICU Boot Software doesn't make use of service 1 at all.

3a) For the service 1 reports which are controlled via the acknowledgement bits (see paragraph 3.1 of [REF2]), TM(1,1) should be supported as a minimum. It should be the responsibility of the ground operators to set the corresponding acknowledgement bit 3 (Acknowledge acceptance of the packet by the Application Process) - as agreed during earlier DMWG sessions, the applications shall provide capabilities to reply to acknowledgement bit 3 (whereas the need for capabilities to reply to acknowledgement bits 0 to 2 is more up to the application themselves).

3b) Service 1 TM packet, which are not controlled via the acknowledgement bits are failure reports (i.e. TM(1,2) and TM(1,8)). Whereas TM(1,8) Telecommand Execution Report Failure again may depend on the need of the application itself, TM(1,2) Telecommand Acceptance Failure shall be implemented as a minimum.

|  |                           |                           |
|--|---------------------------|---------------------------|
|  <b>HERSCHEL/PLANCK</b> | REF. : H-P-ASP-MN-5558    |                           |
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| <b>COMPTE RENDU DE REUNION / MINUTES OF MEETING</b>  |                           | LIEU / PLACE : ASP Cannes |

## ASP AI Answers

### **AI#5 : ASP comments on Herschel boot SW implementation.**

Herschel instruments boot SW implement a very restricted subset of the PS ICD services. Description has been provided at DMWG 20 and is repeated in the following :

#### 1. Event Reporting

- (5,2) Test O.K.
- (5,4) Problem Found

#### 2. Memory Management

- (6,2) Memory Load

#### 3. Function Service

- (8,4) 3 Commands according to the Activity ID:
  - TC Load and Wait
  - TC Load and Boot
  - Force Boot

4. NOT IMPLEMENTED is Service 1 of PS-ICD for up-loading of the new SW image: TC Verification Service is as follows:


- If the received TC is O.K.: there is no acknowledge (1,1);
- If the received TC is rejected: the answer is Event (5,4).

As already verbally stated, ASP main concern is that the current boot SW implementation is far from providing the minimum observability of the Herschel instruments when in the boot phase. Because to our understanding, memory patches have to be applied while in that mode, the instruments could basically remain non observable during minutes (tens of mn ?), should a long patch be uploaded. Even more dangerous, there is apparently no way apart from relying on a TM(5,4) if a TC is rejected, to verify that a patch has been properly applied before forcing the transition to the next mode and thus leaving the PRM based boot (force boot TC) ; no dump TC(6,5) and corresponding TM(6,x) is implemented. This could have dramatic operational impacts.

ASP position in summary, is that the current implementation is extremely risky as it provides no monitoring and verification mean It shall absolutely be reconsidered by Herschel instruments.

Other questions/issues of importance are :

- Do the boot SW support the « data wrap around » feature of the 1553 DLL ? This is mandatory to avoid that, upon a single RT failure (not the DPU in boot mode), the CDMU resets, leading to a mission interruption and a transition to Earth Acquisition Mode.
- Specific FDIR procedures to be run by CDMS, different from the nominal ones already provided, may have to be defined to cope with the case described in SOFDIR Annex 1 Fig 3.3-1 (PTC is wrong as seen by the CDMU => TC has apparently not gone through)

|  |                           |                |
|--|---------------------------|----------------|
|  <b>HERSCHEL/PLANCK</b> | REF. : H-P-ASP-MN-5558    |                |
|  | DATE : 20 &<br>21/10/2004 | PAGE : 17 / 17 |
| <b>COMPTE RENDU DE REUNION / MINUTES OF MEETING</b>  | LIEU / PLACE : ASP Cannes |                |

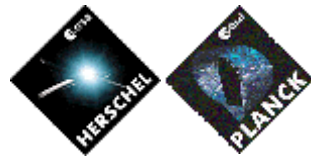
**AI#7 : To define the new APID's corresponding to the duplication of TM APID's**

PS ICD issue 5.0 (July 04) specifies the use of odd APID numbers for TM packets for redundant units.

**AI#8 : To propose a concept for routing TC to nominal/redundant unit including management at HPSDB level**

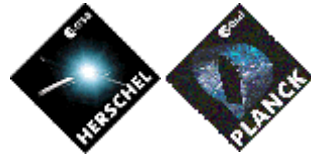
The current CDR baseline (see PS ICD Issue 5.0) is that a single APID is used for both nominal and redundant units. The routing of the TC's on board is driven by a table which associates the RT address to the APID (ie. to the user). Instruments DPU on/off or switch over will be accompanied by the corresponding change (by a dedicated TC sent before/after the switch off/on) of the table containing the RT address to be used. This is an operation constraint. Note that this is feasible because there is no instrument DPU autonomous switch over.

As far as HPSDB is concerned, the parameters must be defined separately for each « box », (nominal and redundant), and because the switch over will be initiated by the instruments, the proper database « side » will obviously be used...



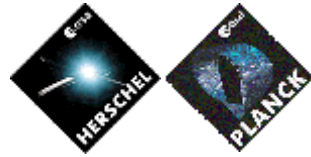
## ANNEX 3

# PLANCK Inst. FDIR and Operation Interfaces



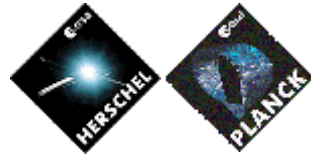
## HFI

| class         | Failure type  | S/C action  | Remark  |
|---------------|---|---|---|
| <b>FDIR 0</b> | Major S/C failure                                   | HFI has defined a switch off procedure in TS-PHBC-100006-LAL.   | : this procedure will be used for an intentional HFI turn off. In case of major S/C failure (S/C level 4), all HFI units are turned off ~simultaneously by HW |
| <b>FDIR 1</b> | Switch instrument to standby<br><br>S/C mode change | HFI has defined a standby mode in TS-PHBC-100006-LAL ; it is reached after 3 « safe » TC's.<br>Do nothing :HFI default mode in S/C Sun Acq or Earth Acq is « science Mode » | Note that this is not compliant with OIRD (there shall be 1 single TC to for a Mode switch).  |
| <b>FDIR 2</b> | HFI RT 1553 DLL failure                             | Switch OFF DPU + REU  | Detected by S/C   |
|               | TC transfer failure                                 | do nothing  | Detected by S/C   |
|               | Failure on TM transfer                              | S/C shall initiate the « loss of DPU communication » procedure (FDIR 5-1)   |   |



## ▼ HFI (cont ')

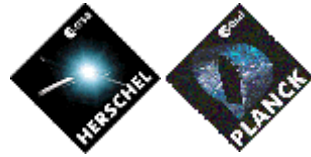
|               |                                |   |                |
|---------------|--------------------------------|---|----------------|
| <b>FDIR 3</b> | DPU LCL trip off               | ASP propose to cover it by FDIR 5-1 (loss of communication with DPU)    | HFI to confirm |
|               | REU LCL trip off               | ASP propose to cover it by FDIR 5-2 (loss of communication with REU)    | HFI to confirm |
|               | REU analog belt n LCL trip off | ASP propose to cover it by FDIR 5-0 (REU sync failure)                  | HFI to confirm |
|               | 4KCDE LCL trip off             | ASP propose to cover it by FDIR 5-3 (loss of communication with 4KCDE). | HFI to confirm |
|               | 4KCDE compressor LCL trip off  | do nothing  |                |
|               | DCE LCL trip off               | do nothing  |                |
| <b>FDIR 4</b> | Planck payload level failure   | TBD   |                |



## ▼ HFI (Cont ')

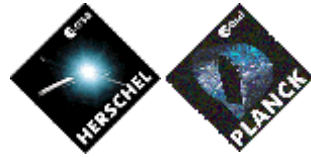
|               |                                 |   |  |
|---------------|---------------------------------|---|--|
| <b>FDIR 5</b> | Synchronization failure         | <ol style="list-style-type: none"> <li>1. Suspend MTL for HFI</li> <li>2. Recovery as defined in FDIR 5-0 procedure</li> <li>3. Resume MTL for HFI if successful</li> </ol> | Detected by DPU                                    |
|               | Loss of S/C-DPU communication   | <ol style="list-style-type: none"> <li>1. Suspend MTL for HFI</li> <li>2. Recovery as in FDIR 5-1 procedure</li> <li>3. Resume MTL for HFI if successful</li> </ol>         | Detected by S/C                                    |
|               | Loss of DPU-REU communication   | <ol style="list-style-type: none"> <li>1. Suspend MTL for HFI</li> <li>2. Recovery as in FDIR 5-2 procedure</li> <li>3. Resume MTL for HFI if successful</li> </ol>         | Detected by DPU                                    |
|               | Loss of DPU-4KCDE communication | <ol style="list-style-type: none"> <li>1. Suspend MTL for HFI</li> <li>2. Recovery as in FDIR 5-3 procedure</li> <li>3. Resume MTL for HFI if successful</li> </ol>         | Detected by DPU                                    |
|               | Loss of DPU-DCE communication   | <ol style="list-style-type: none"> <li>1. Suspend MTL for HFI</li> <li>2. Recovery as in FDIR 5-4 procedure</li> <li>3. Resume MTL for HFI if successful</li> </ol>         | Detected by DPU                                    |
| <b>FDIR 6</b> | Cooler failures                 | Do nothing  | Identified by DPU<br>Failures are recovered by DPU |





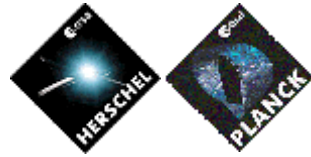
## LFI

| class | Failure type                                   | S/C action  | Remark   |
|-------|--|---|--|
| 1     | Switch instrument to standby                   | Do nothing.   | LFI Safe/standby mode is identical to « Science Mode » |
|       | S/C mode change                                | Do nothing : LFI default mode in S/C Sun Acq or Earth Acq is « science Mode »                                 |  |
| 2     | LFI RT 1553 DLL failure                        | Do nothing  | Detected by S/C LFI to confirm                         |
|       | TC transfer failure                            | Do nothing  | Detected by S/C  |
|       | Failure on TM transfer                         | S/C shall initiate the « loss of S/C-REBA communication » procedure (class 3)                                 | Detected by S/C  |
| 3     | REBA failure => loss of S/C-REBA communication | Disable MTL for LFI<br>LFI has defined a specific procedure (MOM DMWG 19) which terminates by RAA switch OFF  | Detected by S/C  |
|       | RAA failure                                    | Disable MTL for LFI<br>LFI has defined a specific procedure (MOM DMWG 19) which terminates by RAA switch OFF. | Detected by REBA                                       |



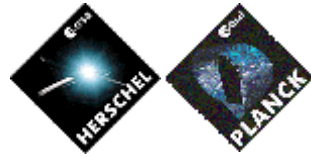
## ▼ SCE

| class | Failure type                                 | S/C action   | Remark                            |
|-------|--|--|-----------------------------------|
| 1     | Switch instrument to standby                 | TC go to Ready Mode                                  | SCE to confirm                    |
|       | S/C mode change                              | Do nothing   | SCE to confirm                    |
| 2     | SCE RT 1553 DLL failure                      | Switch to redundant SCS (ref :PA- PSCB- 100006- ISN) | Detected by S/C<br>SCE to confirm |
|       | TC transfer failure                          | Switch to redundant SCS (ref :PA- PSCB- 100006- ISN) | Detected by S/C<br>SCE to confirm |
|       | Failure on TM transfer                       | ?  | Detected by S/C<br>SCE to explain |
| 3     | SCE failure => loss of SCE-S/C communication | ?  | Detected by S/C<br>SCE to explain |
|       | SCC failure                                  | ?  | Detected by SCE                   |



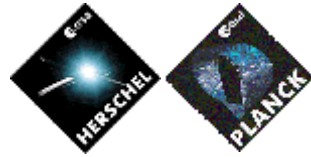
## ANNEX 4

# HERSCHEL Inst. FDIR and Operation Interfaces



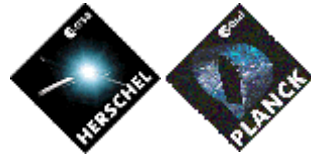
## ▼HIFI

| class | Failure type                                 | S/C action                                    | Remark   |
|-------|--|---|--|
| 1     | Switch instrument to standby                 | TC go to Standby Mode                         | HIFI to confirm  |
|       | S/C mode change                              | TC go to Standby Mode                         | HIFI to confirm  |
| 2     | ICU RT 1553 DLL failure                      | TBD<br>(ref. SRON-U/HIFI/UM/2004-001)         | HIFI to define   |
|       | TC transfer failure                          | TBD<br>(ref. SRON-U/HIFI/UM/2004-001)         | HIFI to define   |
|       | Failure on TM transfer                       | TBD<br>(ref. SRON-U/HIFI/UM/2004-001)         | HIFI to define   |
| 3     | ICU failure => loss of ICU-S/C communication | TBD   | HIFI to define   |
|       | HIFI internal failure                        | Do nothing<br>(ref. SRON-U/HIFI/UM/2004-001)) | No HIFI failure is identified which requires S/C support |



## ▼PACS

| class | Failure type                                 | S/C action         | Remark                          |
|-------|--|--------------------|---------------------------------|
| 1     | Switch instrument to standby                 | TC go to Safe Mode |                                 |
|       | S/C mode change                              | TC go to Safe Mode |                                 |
| 2     | DPU RT 1553 DLL failure                      | Power OFF PACS     | Procedure to be defined by PACS |
|       | TC transfer failure                          | Power OFF PACS     | Procedure to be defined by PACS |
|       | Failure on TM transfer                       | Power OFF PACS     | Procedure to be defined by PACS |
| 3     | DPU failure => loss of ICU-S/C communication | Power OFF PACS     | Procedure to be defined by PACS |
|       | PACS internal failure                        | ?                  | To be defined by PACS           |




**SPIRE**

| Class | Failure type                 | S/C action  | Remark  |
|-------|------------------------------|---|---|
| 1     | Switch instrument to standby | TC go to Standby  |   |
|       | S/C mode change              | TC go to Standby  |   |
| 2     | DPU RT 1553 DLL failure      | Disable MTL for SPIRE<br>Switch OFF SPIRE as per SPIRE-RAL-PRJ-001978 §5.1.3                      |   |
|       | TC transfer failure          | Disable MTL for SPIRE<br>Switch OFF SPIRE as per SPIRE-RAL-PRJ-001978 §5.1.1                      |   |
|       | Failure on TM transfer       | Disable MTL for SPIRE<br>Switch OFF SPIRE in controlled manner as per SPIRE-RAL-PRJ-001978 §5.1.2 |   |
| 3     | DPU power failure            | Run « DPU Anomaly » procedure as per SPIRE-RAL-PRJ-001978 §6.3                                    |   |
|       | DRCU power failure           | Run « DRCU Anomaly » procedure as per SPIRE-RAL-PRJ-001978 §6.2                                   |   |
|       | DRCU temperature anomaly     | Run « DRCU Anomaly » procedure as per SPIRE-RAL-PRJ-001978 §6.2                                   |   |
|       | Operations anomaly           | Run « Operation Anomaly » procedure as per SPIRE-RAL-PRJ-001978 §6.4                              | After SPIRE notifies it is ready to resume operations, run « Operations Resume » procedure as per SPIRE-RAL-PRJ-001978 §6.5 |

## ANNEX 5

If two different APIDs are assigned to discriminate between cold Redundant instrument electronics there are some effects on the MIB database definitions, as described below.

### Telemetry

Definition of two SPIDs per packet, and related duplication of packet location file (PLF). Although it is technically feasible to have the *same* SPID and PLF for *identical* packets generated by *different* APIDs, we would rather follow what is suggested by the S2K experts and have *separate* SPIDs whenever possible. This allows to have different history files for different units, which is important in our case, since we will have the same parameter names used by the two redundant units. Using a different SPID will make the unit identification operationally easier : **all monitoring displays show the “packet mnemonic”** which is defined as TPCF\_NAME for each SPID (the mnemonic could be something like HIFI\_A\_HK vs HIFI\_B\_HK ).

Note that the SPID is used as well as retrieving filter in a number of monitoring applications. The price to pay is the duplication of all PLF records for PLF\_SPID nominal and redundant. Since the PLF records are otherwise exactly the same, this is not a very heavy task and can be performed in a few seconds : once the PLF records have been defined for the PLF\_SPID of the main unit, all is needed is an SQL script performing the complete copy of the same records for the PLF\_SPID of the redundant unit. Two records (instead of one) would be needed of course in PID and TCPF , one for each SPID.

The data in the Storage Selection Definition Report TM(15,6) and in the Event Detection List Report TM(19,7) would be more structured, since the APID is part of the data.

### Telecommand

Some telecommands would have to be duplicated, **unless** an agreement is found on masking the TM APID as seen by the on board software.

The commands affected are those containing the TM APID information. I could trace the following :

- Select downlink/storage of telemetry packets TC(14,5)
- Add Packet Definitions to Packet Store TC(15,3)
- Remove Packet Definitions to Packet Store TC(15,4)
- Downlink Packet Store Contents TC(15,7)
- Saving of HK TM Packets TC(8,4,9,1)
- Add Events to Detection List TC(19,1)
- Delete Events from Detection List TC(19,2)
- Enable Actions TC(19,4)
- Disable Actions TC(19,5)

For what concerns the service 19 commands I see this more as “added flexibility” rather than “duplication” , since the event-action entries may well need to be different for the two units. For what concerns the increased EAT table size an agreement could be reached to load the entries of the currently active unit and only the most basic ones (or none) for the redundant unit.

*Note: background SPID information from the S2K monitoring Architectural Design Document :*

*The mission specific packetiser will set the SCOS-2000 packet header attributes such as SCOS-2000 packet Id (SPID), datastream number and filing time of the packet as the minimum in order **to decide where to file the data.***

...

*The archive maintains individual archive files containing only packets of the same SPID, packet category (TM,TC or EVENT) and Datastream.*

## ANNEX 6

### HPSDB

- ▼ Instruments loading status
- ▼ Naming convention
- ▼ Test sequences



## ▼ Instrument loading status :

| Instrument      | version  | Total errors | HPSDB error | Naming convention error | Data error | Comments                |
|-----------------|----------|--------------|-------------|-------------------------|------------|-------------------------|
| PACS            | V7.15    | 8            | 2           | 4                       | 2          | Pb of consistency check |
| SPIRE           | 09/09/04 | 8            | 1           | 3                       | 4          |                         |
| HIFI            |          | 17           | 4           | 6                       | 7          |                         |
| LFI             | 2        |              |             |                         |            | Not loaded              |
| HFI             | 30/09/04 | 34           | 2           | 27                      | 5          |                         |
| Sorption cooler | 1.0      |              | N/A         | 13                      | N/A        | Not possible to load    |

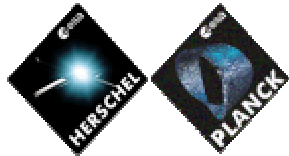
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## ▼ Naming convention :

□ First objective : allows merging of data from different sources:

- Instruments,
- SVM,
- PLM

□ New objective : mask the SCOS deficiencies to the users



---

□ PIC table uniqueness :

- The PIC table allows only a unique definition for SID1 and SID2 per (type, subtype).
- Up to now there is no rules, so each user was free to define SID1 and SID2 (unless they are specified inside the PSICD).
- Naming convention will be updated to fix the PIC table (according to current generic HPSDB definition at generic level).
- Some instruments could have to redefined their packets (HFI, ...)
- Warning about type = 8, 1 and 5.

## □ Bridge file generation :

- Due to ESA requirement to define common items inside HPSDB (calibration curve, ...), "Generic box" concept has been implemented (for instance curve ON/OFF: )
- Due to Change in some identifiers format (SCOS was too limited) :
  - ★ Curves from number(4) to Char(10)
  - ★ CVS from Number(5) to number(9)
  - ★ Parameter range set from Number(4) to Char(8)
- Due to different SCOS version between CCS and instruments, instruments have been required to code :
  - ★ Curve as number(3),
  - ★ CVS as Number(4)
  - ★ Parameter range set as Number(3)

→ The correspondence is the following (upper case = character, lower case = numerical digit) :

★ Curve :

- HPSDB : <S> <ele> <nbr> <pos>
- S2K constraint : <nbr>

★ CVS

- HPSDB : <ss> <nbrs> <pos>
- S2K constraint : <nbrs>

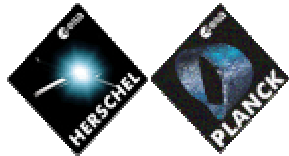
★ parameter range set

- HPSDB : <S> <RNBR> <pos>
- S2K constraint : <nbr>

→ When generating instrument bridge files we extract :

- ★ Curve <nbr>
- ★ CVS <nbrs>
- ★ Parameter range set <nbr>

→ The identifiers are restituted as they were provided



- 
- The same process applies for generic data this could generate duplication (this is currently the case) :
  - Two solutions are foreseen to avoid this duplication at generic item generation :
    - ★ Use configuration files : (the same ones as the ones used at loading time)
      - Advantage : using of the same configuration files will allow to reconstitute the same identifier
      - Drawback : The correspondence instrument item generic item shall be one to one and this is difficult to implement
    - ★ Automatic generation by addition of a fixed number :
      - Curve : + 1000
      - CVS : + 10000
      - Parameter range set : + 1000
      - Advantage : easy to implement
      - Drawback : no restitution of initial identifier.

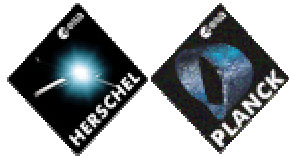
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□ On-board identifier :

→ Due to SCOS limitation (On-board Identifier shall be unique for a SCOS instance) and following ESA request, allocations have been done in the naming convention

→ We are not sure that instrument use On-board Identifier, mail has been sent to all instruments :

- ★ PACS : use them (but to be clarified)
- ★ HIFI : does not use them
- ★ SPIRE : TBD
- ★ HFI : TBD
- ★ LFI : TBD
- ★ Sorption cooler : TBD



## □ TC gap and overlapping :

→ In its current status MIB ICD allows to reference the TC parameter inside a TC packet via the absolute position (CDF\_BIT), that means gap and overlapping are allowed.

→ Unfortunately when SCOS processes such TC :

★ It processes the parameter one by one in the order of their absolute position but :

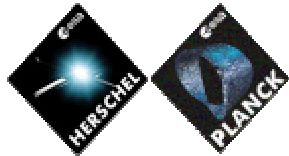
- In case of gap the current parameter is shifted on the left in order to fill the gap,

- In case of overlapping the current parameter is shifted on the right in order to remove the overlap,

★ As consequence the TC sent to the spacecraft could not be the one defined inside the MIB files.

→ To overcome this problem a consistency check will be added inside HPSDB to check that a TC does not contain gap and overlapping (this will be an additional control at instrument bridge file loading).





## □ "SCOS phantom"

→ When bridge files are loaded inside SCOS some modifications are performed by SCOS :

- ★ Creation of new packets (reserved packets),
- ★ Modification of TC (refer to previous viewgraph),
- ★ Extrapolation flag associated to curve,
- ★ Etc ...

→ Please provide the exhaustive list of what the "SCOS phantom" does to ensure :

- ★ there is no conflict with the naming convention,
- ★ the processing is understood,
- ★ the integration of instrument data inside HPSDB is correct,
- ★ Etc ...

## □ Redundant TM

→ How instrument will deliver bridge files

★ Case 1 : Three independent sets :

- One for nominal TM
- One for redundant TM
- One for TC

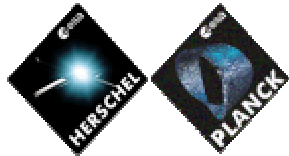
★ Case 2 : One set (half instrument) containing :

- Nominal (or redundant) TM
- TC

★ Case 3 : One set (Full instrument) containing :

- Nominal TM
- Redundant TM
- TC

→ Currently only the last case is normally supported by HPSDB



- Note : before loading an instrument inside HPSDB, the full corresponding objects (subsystem and elements) shall be deleted first.
- Some work-around can be envisaged :
  - ★ Creation of two subsystems (one nominal and one redundant) - Warning about limitation on sub-system-type (only one subsystem of a dedicated type can be integrated inside a model and number \_ and only 7 subsystem type still available).

## ▼ Test sequences

### □ What is CUS ?

- What will be delivered to ASP ?
- How are TOPE sequences generated from CUS ?
- Etc ...

### □ Reverse generation tool

- last version of RHEA document "Tcl/TOPE Coding Constraints for MOIS reverse engineering - ALC-MOIS-TN-RHEA-0002 issue 1.2 dated 08/03/04
- Do you have this document ?
- Do you apply it ?
- Are the constraints acceptable
- Note : "PROCS" no more supported (TBC).

## □ Test sequence naming convention

→ Defined in ASP document : “MOIS rules to support modularity and commonality” - H-P-1-ASP-TN-0575 issue 1.0 dated 06/01/04

→ Do you have this document ?

→ Do you apply it ?

→ Are the constraints acceptable

→ Test sequence naming convention is proposed to be changed :

★ from :

- <S/S> <level> <Type> <Mnemonic> <position>

★ to

- <S/S> <Position> <Level> <Type> <Category> <Id> <Mnemonic>

## **ANNEX 7**

# **OBSM D2 Delivery**

- OBSM D1 SPR's fixed in D2 : 25 SPR's and 1 SCR
- New features include OBCP Commanding/Processing, Command Optimisation, Time Tagging, Octet String 7,0 for all patch Cmds, Comprehensive MDF.DAT & MIB Updates, Offset MID/Addr Handling, 48bit Data capability etc (See SRN).
- D2 ESOC Acceptance testing started 18/10/04. Delivery to existing PI users (via SSH) available from 25/10/04 (Confidence Checked only). Formal delivery available to all PI from 3/11/04.
- 4wk PI test period, SPR submission deadline 03/12/04.
- D3 delivery planned Jan05 to include all SPR's from D1/D2 & functionality for SSMM, STR (if solved at Satellite level) & SAU alignment.
- New users can be handled during the acceptance test period. Required HW/Configuration is available on request.

## **ANNEX 8**





## **HGSSE Report to DMWG#21**

**Micha Schmidt**

**for**

**Kevin Galloway**

**(Chairman of the HGSSE group)**



## Attitude Reconstruction

- There is a system level CDR action [resulting from RID AVI-070] on Industry to determine the value/ benefit of on-ground processing. This action remains open. H/P Flight Dynamics Manager is pursuing this with Project.
- FD are waiting on the outcome of this action before producing the AHF ICD/ detailing what on-ground processing they can perform.
- This is still not critical but has been on-going for a long time. The science ground segment design for attitude data processing is awaiting the outcome of this issue.

## End-to-end testing

- The ESOC integration and test engineer gave a presentation at HGSSE#27 regarding the current status of the end-to-end testing plans.
- It is in the HGSSE ToR to support/ monitor the end-to-end testing
- Actions were placed to identify the corresponding people in the science ground segment.
- Discussions on-going how best to support end-to-end testing of the whole Herschel ground segment.



## HIFI science packets and telemetry consolidation

- ↓ HIFI science telemetry packets containing a read-out frame will have the same time stamp.
- ↓ Problem: The design of the HSGS systems depends upon the correct ordering of the telemetry packets upon ingestion into the archive.
- ↓ The correct order is guaranteed in the ILT and IST mission phases as these are real time operations.
- ↓ The correct order of the consolidated telemetry is maintained in the in-orbit phase in the event of nominal operations.
- ↓ At HGSSE meeting #27 the HSGS system engineers presented a possible scenario where the correct order of the consolidated telemetry might not be maintained.
- ↓ ESOC clarified that it should be possible to maintain the order of the consolidated telemetry under all possible scenario based on the correct selection of the primary sort key (Earth received time, source sequence count were possibilities mentioned in the meeting).
- ↓ A RID will be raised on the MCS to ensure that the issue is formally addressed.